Minutes & Slides from Proton Driver RF Meeting – November 2, 2004

(G.W. Foster)

SUBJECT: ANL Tests, WG Phase Shifter hardware & simulations, SMTF EOI

Attendees: Al Moretti, Jim MacLachlan, Dave Wildman, Victor Yarba, Timergali Khabibouline, Ivan Gonin, Gennady Romanov, Nikolay Solyak, Brian Chase, Fernanda Garcia, Pierre Bauer, Iouri Terechkine, Bill Foster

MINUTES

1) **Upcoming tests at the ANL (APS) Klystron Test Stand** were discussed by Dave Wildman. The klystron is a 352 MHz 1MW CW with a circulator and coaxial interface to our tests loads (a coaxial phase shifter). Doug Horan of ANL is going to set up the LLRF to produce bursts of RF at our duty factor (1.5-4.5 msec.), so this should be fine for full-power testing of the coax phase shifter. He is also going to try operating the klystron at 345 MHz with the idea of trying to do pulsed-mode tests of existing RIA SCRF spoke resonator cavities.

2) **Hardware Status Report on the 1300 MHz Waveguide Phase Shifter** was given by Iouri Terechkine. A design for how to cut the YIG bricks has been finalized and the ferrite should be cut and the final assembly in the next couple of weeks.

3) **Measurement and Simulation Results on the 1300 MHz WG Phase Shifter** were presented given by Timergali Khabiboulline. He sees an interesting transverse resonance when the two YIG blocks on opposite sides of the waveguide are biased in the same direction. In the simulation the fields in the shorted stub develops a right-left asymmetry, presumably due to the interference of the incident and reflected wave and the non-reciprocal behavior of the YIG due to the small circular polarization present since the blocks are not all the way to the edges of the waveguide. In the simulation this behavior disappears when the YIG blocks are biased anti-parallel, which will be possible with the new purpose-built magnet yoke but not with the big test dipole at MS9. A worry is that these transverse resonances might also be generated by a mismatch in the properties of the two YIG blocks, so we might need some sort of sorting in production. Timergali's slides are at:
http://tdserver1.fnal.gov/8gevlinacpapers/Meeting_Minutes/RF/WG_shifter_meas2004_09_27.ppt

4) **The SMTF EoI** document was discussed. This is the nascent plan to set up a variety of cryomodule test facilities in the Meson area. Funding for the various efforts is as yet unclear. The document is online at:
http://ilc-dms.fnal.gov:1352/Members/mishra/SMTF_EOI_Submitted.doc